DOCUMENT RESUME

ED 363 104 FL 021 546

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TITLE The Interpretation of Linguistic Signs and the Role of Inference.
PUB DATE Oct 91
NOTE 28p.; For the serial publication as a whole, see FL 021 540.
PUB TYPE Viewpoints (Opinion/Position Papers, Essays, etc.) (120) -- Journal Articles (080)
JOURNAL CIT CUHK Papers in Linguistics; n3 p125-151 Oct 1991

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Communication (Thought Transfer); *Grammar; *Inferences; *Linguistic Theory; Models; Phonology

ABSTRACT

This discussion on the interpretation of language and the role of inference argues that language is a tool in the sense that it provides the basic operators and rules of operation for speech just as arithmetic does for calculation. It is suggested that because language is a tool that is restricted in its expressive potential by the linguistic system, speakers often have to rely on inferences made on the basis of the meaning of sentences to get at the messages conveyed, and learn to take advantage of this process to carry on communication. The discussion is divided into the following sections: (1) language is used to say something; (2) the model of saying things; (3) the interpretation of sign meanings; (4) the interpretation of grammatical signs; (5) lexical systems; (6) the interpretation of lexical signs; (7) the role of inference in sign interpretation; (8) logical inference at all levels of language use; (9) inference at the phonological level; (10) inference at the lexical level; (11) inference at the grammatical level; (12) inference at the lexico-grammatical level; and (13) a model for inference in sign and sentence interpretation. (Author/JL)

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CUHK PAPERS IN LINGUISTICS NO.3 1991 : 125 - 151.

ED 363 104

THE INTERPRETATION OF LINGUISTIC SIGNS AND THE ROLE OF INFERENCE

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1. Language Use

1.1 Language is used to say something

Although it may seem too elementary a thing to say that language is used to say something, it is apparently not so understood by most linguists and speakers in general. With regard to everything else we are ready to admit that if we use something to do something else, then this "something" does not go into the "something else" and must not be included in it as a part or a component. We use a camera to take a photo, the art of drawing to produce images of real things, arithmetic to settle accounts, and so on and so forth. In all these cases, the former (camera, art of drawing, and arithmetic) are instrumental to the creation of the latter (photographs, images, and accounts), but do not go into them to form a part. In this sense, using something to do something else is different from using something to make something. When we use wood to make a table, the wood goes into the table, and consequently, theoretically speaking, there is so much wood less, as wood, in this world. When we make a statue with wax, the same thing happens. But language does not diminish with use, so language use belongs to the category of using something to do something else.

Besides, there is no difficulty in seeing that a photo of a person is not the person himself. A drawing of a table is likewise not the table. By inference, the thing we say is not the thing we say about.

Yet with language the differentiation of the tool from the artefact, and the differentiation of the thing we say from the thing we say about are difficult to make--because the tool (language) is not anywhere to be found outside of the artefacts (utterances); and very often the thing we say about (as in the case of ideas) is not to be found outside of what we say (again utterances). So naturally utterances are easily

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taken to be language.

But utterances are not language, just as a picture is not the art of drawing and a bank account is not arithmetic. The latter are behind, under or in the former, and one can deduce the latter from the former, but the two are not identical. So far I have been arguing that language is a tool in the sense that it provides the basic operators and rules of operation for speech as arithmetic does for calculation. This tool has no natural form of expression except in its products--utterances, but we have long since deduced it from its products and outlined it in various grammars and dictionaries. Further, theorizing about the nature of language, linguists since Saussure have followed the concensus that it represents a system of signs, each of which is a combination of a signal, serving as its form, and a meaning, serving as its content.

The inference linguists have failed to make is: since meaning is inherent in the linguistic system, and this system is, as we have discussed above, instrumental to the production of utterances but does not go into them as a component part, it follows that system meaning must be differentiated from utterance meaning. In using language, we are taking advantage of something which has its own meaning to **indicate** the meaning we want to express.

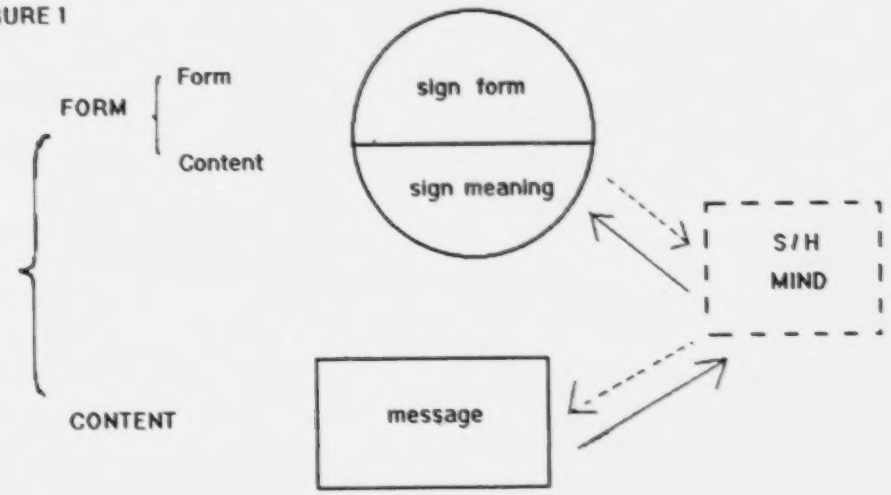
Since language is a tool that is restricted in its expressive potential by the linguistic system, speakers often have to rely on inferences made on the basis of the meaning of sentences to get at the messages conveyed, and learn to take advantage of this process to carry on communication. "What time is it?" is an explicit and straightforward question. But it seems that people are not entirely comfortable with its straightforwardness. Therefore, what one often hears on a casual occasion is "Have you got the time?" or simply "Got the time?" The meaning of the sentence can only be: "Have you got a watch so that you may know the time?" But we know by inference that the person is not interested in knowing if we have the time, but in knowing the time himself. This is not the meaning of the sentence, but it is the message it carries. Apparently, this oblique form of inquiry is preferred because it sounds less imposing: one would feel freer to say "No", since the question is simply whether we have the time, while the request for help is our own inference.

Once inference is understood as a regular component in language use--both in encoding and decoding a message--it follows that conversational implicatures and indirect illocutionary forces become special cases of this general process. Further, as will be demonstrated in Section 3 of this paper, the inferential processes at the various levels of language use all follow the general Gricean pattern of "what is said is p, but what is meant is q".

1.2 The Model of Saying Things

What all the above is driving at is that there are two combinations of form and content at two different levels. Language represents one combination of form and content, defined by Saussure as the combination of the signifiant and signifié (for our purpose we will call them sign form and sign meaning respectively). When language is put to use, this systematic combination of form and content in turn becomes the **form** of a speech event (hence the formulation "language is form"), which is meant by the speaker and understood by the hearer to indicate, to hint at, the **content** of the speech event (the things we want to say, which from now on will be referred to as the message), thus forming another form-content combination. This dual relationship can be shown as follows:

FIGURE 1



(The straight-line arrows indicate the language use process of the hearer; the dotted line arrows that of the speaker.)

The processes indicated in FIGURE I are activated not only when there is some kind of indirect meaning or message to be worked out, as one may tend to think, but are constantly at work in language use. The inferential processes have to be there, if language is thought of as a system with its meaning used to carry messages. Even when a sentence is used in its literal meaning, i.e. when meaning and message coincide, we still need the inferential processes to turn the meaning, which is a potential of the linguistic system, into a message, which is something that is really conveyed in communication, and to reveal that the two actually agree. A sentence like:

(1) Shakespeare was a great playwright.

is said to be used in its literal meaning because every sign meaning in it is turned directly, without any change, into a corresponding sign message, and when the sentence message, resulting from all the sign messages, enter's the hearer s mind to be processed, the final discourse message remains the same. However, this is not always the case. If the same sentence (1) is said in a context where the interest is concentrated on Shakespeare's qualities as a philosopher, then the sentence message of (1) is still "Shakespeare was a great playwright" because no change is brought about by the mind in the sign messages (in everyday terms: every word is used in its literal meaning), but after processing the sentence message, the mind may produce as discourse message something like "That Shakespeare was a great playwright doesn't necessarily mean he was a great philosopher" or "Since everybody acknowledges Shakespeare as a great playwright, that already implies that he was not a great philosopher". Even a factual sentence like

(2) Shakespeare was born in 1564.

may in a suitable context carry the message of "He was not to be blamed for not knowing something", which is also produced by the mind after processing the sentence message.

From this angle, the seemingly unexpected message of (3), said in reference to William Gladstone (Allan 1986):

(3) The prime minister is an old woman.

If we divide the whole process of understanding an utterance into 3 stages of sign message assignment (I in FIGURE 2), sentence message assignment (II) and discourse message assignment (III), then sentences (1) and (2) in their literal meaning are interpreted already at I, passing through II and III unchanged. When (1) is used to carry the message that Shakespeare was not a great philosopher and (2) that Shakespeare may be excused for not knowing something, they are interpreted in their literal meanings at I, then pass II without any change, because as individual sentences they make good sense. But at III, (1) and (2) in this interpretation would seem irrelevant and therefore they are reinterpreted in accordance with the Cooperative Principle, and discourse messages are inferred for them. A literal interpretation of (3), however, is blocked at II by the clash between the male subject and female predicate. It is sent back therefore and goes through I once again with old woman treated as one sign, the resultant interpretation goes through II and III unchanged.

From the above analysis we can see that the understanding of an utterance, generally speaking, has to go through the 3 stages of I, II and III, and that II serves as a check on the results of I. In the following I will discuss the interpretative process from I through II, leaving III largely undiscussed.

2.0 The Interpretation of Sign Meaning

We do not always have a one-to-one relationship between sign form and sign meaning because of homonymy (see 2.1). So sign meaning has to be interpreted, as a result of which we get a sign message.

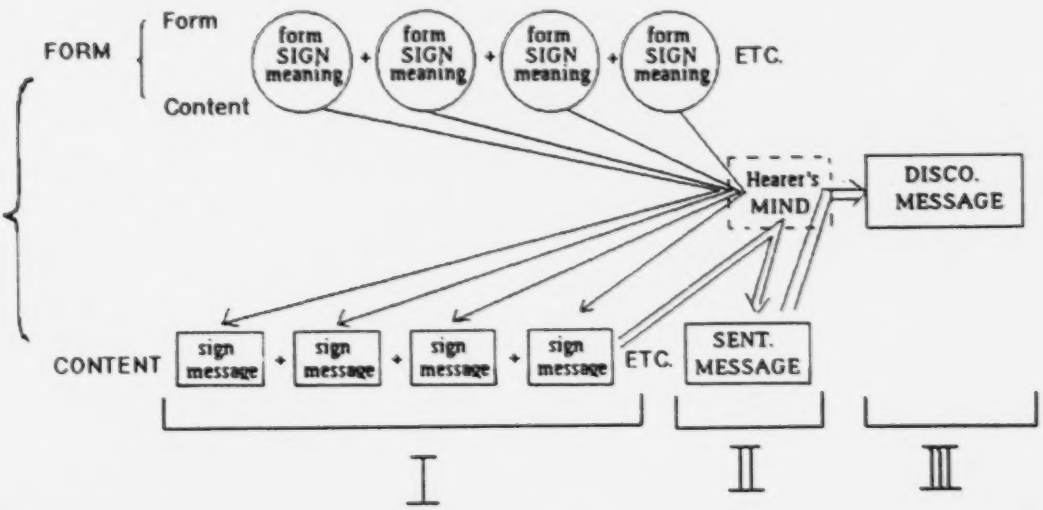
2.1 The Interpretation of Grammatical Signs

The realization that the signifié of a word is determined by the linguistic system rather than by preexistent ideas is a major contribution of structuralist linguistics. But when we give the systematic nature of language too narrow an explanation and demand that one and the same signifiant must signify only one signifié, we find ourselves in great difficulty. What kind of general signifié can we give to light (not dark) and light (not heavy), flat (busted tire) and flat (apartment), march and March, sun and air and

is not difficult to infer, because after the hearer has processed the term the prime minister and concluded that the referent (William Gladstone) is a man, he refuses to take an old woman as a noun modified by an adjective, but goes on recursively to include old woman in one sign and succeeds in obtaining a sign message: "a person who complains too much and cares for trivial things". Then the sentence message of "William Gladstone is a person who complains too much and cares for trivial things" goes through the mind and emerges unchanged as the discourse message.

On the basis of the analysis of these sentences we can draw another diagram (FIGURE 2), which is a more detailed version of FIGURE 1, including the inferential processes at the levels both of single signs and of a whole sentence. For the sake of simplicity, we now take the hearer's point of view, presuming that in order to understand the speaker's encoding process, we have only to reverse the direction of the arrows.

FIGURE 2



son and heir?

In other words, the theory leads us to think that there should not be homonyms, and yet homonymy abounds. In Latin inflectional endings, we have -ae meaning genitive and dative singular and nominative plural ; -i meaning genitive singular and nominative plural; and -o meaning dative and ablative singular in the first declension; -is meaning dative and ablative plural in the first and second declensions; etc. Among modern languages, very much the same is true of the Russian inflectional endings. In English, the /-s/ ending, attached to nouns and realizable as [-s], [-z], [-iz], has two different meanings: "plural" and "possessive".

Looking at the actual use of language, one has to admit that homonymy is not incompatible with the systematic nature of language. This is because language is used by human beings, who are constantly exercising their intelligence vis-à-vis the outside world. Homonymy results when one and the same form participates in different systems or in different specificity levels of the same system, or when a form is assigned a temporary, pragmatic, system. Human beings overcome the difficulty created by homonymy by differentiating linguistic systems, specificity levels and pragmatic systems. This is where the mind comes in.

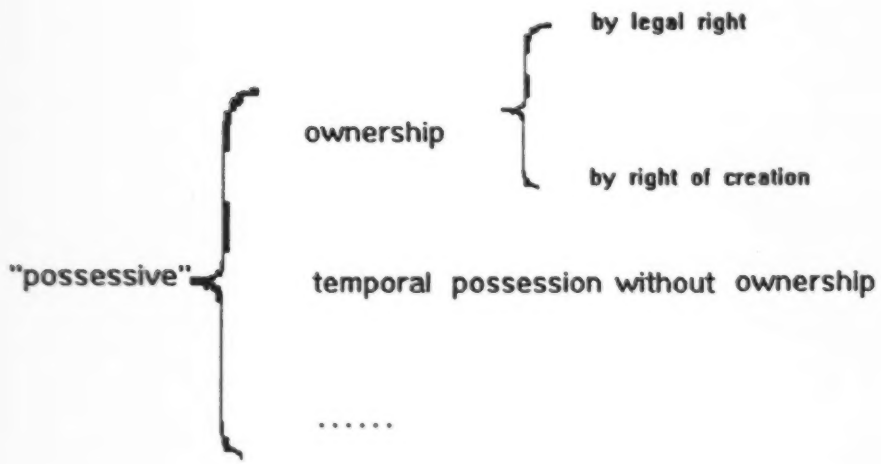
Jakobson (1949) approached this problem on the phonological level when he discussed "overlapping phonemes":

> In Danish this opposition strong/ weak is implemented, for example, by t vs. d in strong position, and d vs. _ in weak position, so that the weak phoneme in the strong position materially coincides with the strong phoneme in the weak position...if one should measure the sound matter without reference to the rule of dichotomy imposed upon it by language, the conclusion would be that there are "overlapping" phonemes, in the same way, as a physicist with his acoustic instruments, according to H. Frei's felicitous comparison, fails to explain why, in a given piece of music, F-flat and E represent two different values.

In grammar, it is often not difficult to differentiate the relevant systems. For example, by relying on the ∅/-s opposition in nouns we recognize the number system, by the same ∅/-s opposition in verbs we recognize the person system of present tense verbs, and by the ∅/-s (which is interchangeable with of NP) we recognize the case system in nouns. As a result of the distinction of these three systems, we disambiguate the three -s's, and arrive at the sign message carried by -s in a given context.

Movement along the specificity scale in grammar is also a common phenomenon. For example, the meaning "possessive" as expressed by /-s/ is a general concept which may be presented as a hierarchical structure, as shown in FIGURE 3.

FIGURE 3



The general concept "possessive" is not only required by the theory to match the signifiant /-s/, but also for the interpretation of the sign meaning at the lowest level of specificity. In a sentence like:

(4) The police have banned the suspect's things.

the general possessive meaning is applicable rather than any or all of the specific possessive meanings listed in FIGURE 3, because some of the

It is difficult to imagine a signifié in which all these meanings are combined together. However, presumably in a pair of sentences such as:

(6) God be blessed. Here comes the man.

most of the oppositions (indicative vs. subjunctive, active vs. passive, third person verb form vs. non-differentiated person verb form) would be activated by the verb forms of be -ed and -s. But often only one of these oppositions is activated in actual language use. In the sentence:

(7) His father worked in a bank.

only the tense opposition (past vs. present) is activated. That is why, hearing such a sentence, one would tend to ask: "Where is he now?" or even "Is he dead?" In the sentence:

(8) I said he comes everyday, not he should come everyday.

the opposition activated is indicative vs. subjunctive.

The actually activated sign meaning, then, represents the sign message that the hearer obtains through the processing of the sign using intelligence.

2.2 Lexical Systems

The complexities of meaning relationships in the lexicon have deterred linguists from talking about lexical systems. However, if we do not expect lexical systems to present an exhaustive list of one-to-one form-meaning combinations, but are prepared to find systems which intersect with each other, move along the specificity scale and may be realized as ad hoc pragmatic systems, as we find in grammar, then we can see that lexical systems share the same characteristics as grammatical systems, showing only much greater flexibility.

A good example of how lexical meaning is assigned by the system is provided by better. Instead of "gooder" or "more good", as the comparative form of good is supposed to mean, the actual meaning is very often "less bad": The patient is better, but still seriously ill; The

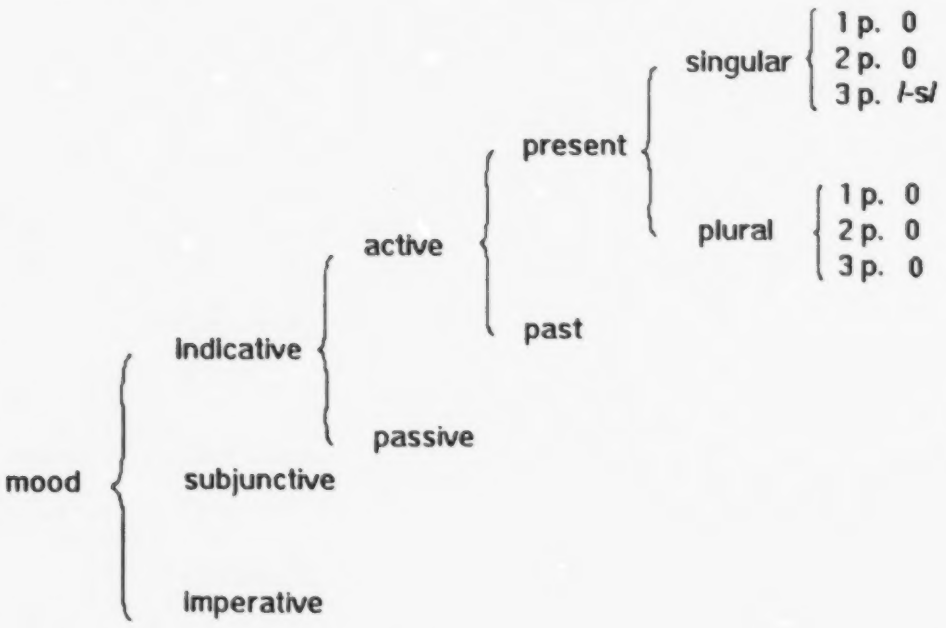
forms of possession may not be implied (e.g. the suspect may not have created anything), while some other forms of possession not enumerated in FIGURE 3, e.g. possession of stolen things, may be implied. However, consider a sentence like (5):

(5) Each of the painter's works was worth a fortune already in his life time, but he died in poverty.

In this case, the general concept of possession is not applicable, so /-s/ has to be interpreted at the higher specificity level of "ownership by right of creation".

The inflectional endings of finite verbs are traditionally said to carry a whole series of meanings. The pair /-s/ and ∅, for example, shares the meanings: "indicative, active, present", then repectively /-s/ implies third person singular subject, and ∅ first or second person singular and all three persons in the plural. These meanings are hierarchical as can be seen in the following diagram:

FIGURE 4



situation has become better, but still very dangerous. Although this may be usual for other European languages too, the two meanings are differentiated in Chinese: gen hao for "gooder", but hao xie for "less bad":

(9) bing ren hao xie le buguo
sick person good some PERF but

yijiu bing de hen zhong.
still sick PRT very heavy
"The patient is better, but still seriously ill."

(9a) * bing ren gen hao le buguo
sick person better PERF but

yijiu bing de hen zhong.
still sick PRT very heavy

It is therefore reasonable to suggest that the meaning of better is not "gooder", but "in an improved state", i.e. it forms an opposition in the direction of improvement with some state already referred to. Then worse would mean an opposition with a certain state in the direction of deterioration. Therefore, the weather can be said to have become better no matter whether it is warmer or colder, dryer or wetter. It can also be said to have become worse in the same atmospheric conditions. The opposition is between a state and an altered state which is thought to be an improvement in the case of better, and a deterioration in the case of worse.

As meanings are determined by systems rather than actual physical qualities or relations, a sign form acquires multiple meanings when it takes part in forming oppositions in more than one system. From this angle, it is not difficult to understand the multiple meanings of light, for example. When it forms an opposition with heavy, a system is formed in which we have a binary division of the semantic field of weight, and light means "the opposite of heavy". Likewise, when the opposition is formed with dark, light means "the opposite of dark".

The systematic nature of lexical meaning, however, will be best shown if two identical words form or participate in forming different oppositions based on the same kind of relationship. In such a case, we can attribute

the difference in meaning to nothing other than the systems, i.e. the oppositions in relational, not material terms. We have a good example in black and white. First, there is a system of relative meaning consisting of the opposition of these two terms: a binary division of a semantic field of color. Thus, coffee is said to be either black or white while actually it can only be different shades of brown. For the same reason--that in this system only a binary division is permitted-- day is always said to be white in Chinese, night is black probably in all languages, but when there is need to talk about a night that is not that black, as in Leningrad in summer, one is left with the only alternative: a white night. On the other hand, black and white can certainly denote actual, "physical" colors. In this case, they form a different, quite separate, system with other names for colors, such as red, orange, yellow, green, blue, etc.

With names for concrete things, the specificity levels of a system are of paramount importance. When we talk about streets full of cars, we are on the level of means of transportation in a city. The system concerned is mainly an opposition between cars and pedestrians. When we say a typical American family would own a car and a wagon, we are on a level of higher specificity, using a system in which car is opposed to wagon, limousine, bus, etc. When my remark you've got a nice car evokes the response Yeah, it's a pretty good pick-up, I am being reminded of the need to shift to a level of higher specificity. The word book is used in its low specificity meaning in the sentence The room is full of books, where journals, pictorials, etc. are not differentiated from books. When we say Books are on the second floor and journals are on the third floor, a higher specificity meaning of books is evoked, in which journals are not included. Finally, when we say The accountant is busy with his books, the book refers more specifically to a definite kind of book. It is also due to system shifting that we have no difficulty in determining that All men are born equal does not exclude women from equal privileges.

One striking feature of lexical systems is that they are often 'ad hoc'. For example, people tend to speak in terms of cardinal colors. When an orange colored jacket is referred to as a red

jacket (Do you see the man in a red jacket?), the meaning of the signal is that it is not white, not black, not grey, not blue, not maize, in a word not the color one would usually think a jacket may be, except what is referred to as red. The hearer would match all the jackets in sight and decide that the orange one fits best. So he would understand the speaker as referring to the orange jacket. Here we are said to be using red in a rough sense.

2.3 The Interpretation of Lexical Signs

From the brief description of lexical systems above, it is clear that when we use our intelligence to interpret a lexical sign we are trying to determine the opposition it forms, the specificity level at which it is used, and/or the ad hoc meaning it acquires in the context. That is to say, we go along much the same tracks as when we interpret grammatical signs.

3.0 The Role of Inference in Sign Interpretation

In the above we have tried to show that the interpretation of both grammatical and lexical signs can, in the final analysis, be described as the determining of the system of oppositions that is contextually activated. Now we go on to show that logical inference underlies this process of determination whenever ambiguity results from homonymy or lack of clarity in general.

3.1 Logical Inference at all levels of Language Use

It has been mentioned in 1.1 that the Gricean pattern of the working out of conversational implicatures is at work at the various levels of language use. Here we quote Grice's own formulation: "He has said that p; there is no reason to suppose that he is not observing the maxims, or at least the CP; he could not be doing this unless he thought that q; he knows (and knows that I know that he knows) that I can see that the supposition that he thinks that q is required; he has done nothing to stop me thinking that q; he intends me to think, or is at least willing to allow me to think that q; and so he implicated that q." (Grice 1967)

It remains for us to illustrate the process

at the various levels of phonology, lexicon, syntax and discourse.

3.1.1 Inference at the Phonological Level

Like all other linguistic systems, the phonological system is not free from homonymy. The neutralization of the voiced and voiceless consonants word-finally in such languages as Russian and German is a point at issue. Do we have archiphonemes here, or a different phonological system in __# position, or a different phonological system wherever there is a change in the system? From the view that linguistic systems undergo changes in language use, the loss of voicing in word-final position results simply in a variant of the phonological form of the word to be interpreted, through inference, as **linguistically** the same as the form with the corresponding voiced consonant. The inferential process briefly is like this: he has said [sat], but his utterance is meaningless unless he means sad (garden), it is usual for the Russians to pronounce the voiced consonants as their voiceless counterparts, there is nothing to prevent us from taking [sat] as sad, therefore what he means is sad.

There are two remarks to make here:

(1) The inferential process is, needless to say, unconscious, more so at the phonological level than elsewhere. Hearing [rot], a native speaker of Russian would assign it either to the morpheme /rod/ "species" together with other forms such as [roda] "species-GEN", [rodu] "species-DAT", etc., or to the morpheme /rot/ "mouth" together with other forms such as [rta] "mouth-GEN", [rtu] "mouth-DAT", etc. He does this as if instinctively, but in the final analysis the assignment can only be the result of a judgment based on the fitness of either paradigm to the semantic structure of the sentence.

(2) The conditions of neutralization (word-final position and others) reflect the regularities of the pronunciation of native speakers, but they are not essential for understanding. If only the minimal data (grammatical, lexical and discoursal) are there for inferences to go on, hearers can manage to arrive at the message signalled without knowing the conditions for neutralization.

In many Chinese dialects, n and l do not contrast, although they do in Mandarin.

Therefore, it is not uncommon for speakers of those dialects to say:

(10) qing chi ni, zhe ni hen hao chi
please eat ni, this ni very good eat

which means, for Mandarin speakers, "Please eat the mud, this mud is very delicious." Here, the Gricean inferential process would be triggered: "He has said ni 'mud', he could not be doing this unless, because of the non-differentiation of ni and li in his dialect, what he meant was li 'pear', he has done nothing to stop me thinking that he meant 'pear' instead of 'mud', so he must have meant 'Please eat the pear, this pear is very delicious'."

Inferences may also be triggered by intonation. For example, in the question-answer pair:

(11) A: Where's the spaghetti sauce?
B: On the shelf (rising).

the rising intonation after "On the shelf" primarily signals the speaker's uncertainty. However, when uncertainty is excluded (e.g. if B is a housewife and has just been using the sauce), then the usual process entails: since B cannot be uncertain about the whereabouts of the spaghetti sauce, the rising intonation can only mean an avoidance of the possible implication of self-assertion or rudeness of the falling intonation. Hence women's preference for it.

3.1.2 Inference at the Lexical Level

In the phrases in a bank and on the bank, the word bank is not homonymous from a systematic view. But the sentence:

(12) His aim was to consolidate the bank.

is ambiguous. What we do in order to disambiguate it is to make an inference on the basis of contextual knowledge, e.g. if, for example, the general topic is to make preparations before the rainy season, the sentence is not meaningful unless it means the strenghthening of the river bank. Again, because this inferential process is so familiar, it is usually thought that just by pointing to the context the word bank would be disambiguated. Actually, the jump in conclusion

from preparations against flooding to the consolidation of river banks can be made only because the inferential process lies behind it. This can be shown by the fact that if it should so happen that in the context the prevention of the collapse of a financial institution is essential to making preparations against the flood, the sentence may still mean the strengthening of the financial institution.

It is well-known that in irony or other instances of language use where strong emotion is involved words are often used to mean their opposites: poor devil, a fine little beggar, etc. This explains why, when the speaker apparently has no reason to like the person he refers to, the inferred message of a sentence like you are a nice guy is just the opposite of what it means.

Inference is indispensable in interpreting idioms and set phrases. One does not actually have to, and an advanced learner often does not, consult a dictionary to learn a phrase like have something on one's conscience, although it may be useful for dictionaries to contain it for confirmation. What a learner usually does is to infer: since conscience is not a substantial thing, it cannot have anything on it unless in a figurative sense and since conscience means a person's natural goodness, to have something burdening it can only mean, figuratively, "to feel guilty for something".

The sentence He offered her his hand has to be disambiguated, and, theoretically at least, only when both the sense of offering her a hand to be shaken and the interpretation of offering her help have been excluded, can the idiomatic meaning of a proposal of marriage be decided on.

The meaning of some idioms cannot be inferred, but a learner has to go through the process of excluding the literal interpretation anyway. Thus, only after making sure that the literal meaning of kicking a bucket makes no sense in the context, can a learner turn to a dictionary or to someone else for the meaning of kick the bucket. In the case of It's raining cats and dogs, no interpretation can be worked out to be excluded, but one has at least to go through the process of reasoning that "literally the sentence doesn't make sense, so it must have some idiomatic meaning".

In this way it is not surprising that a cyclist should, as reported in Bolinger (1981),

think of saying, with a twist of his wrist:

(13) I find that the easiest way to shift gears is just to kick the trigger.

A hearer would interpret his kick as containing all the semantic features of kick with the exception of [+foot], and consequently substitute [+wrist] for it. This would be the result of a reasoning process: "No one could conveniently shift gears with his foot, therefore he could not have said kick unless he meant a movement of his hand, he indicated this with a twist of his wrist, therefore what he meant was 'to make a movement with one's hand that is like a kick'."

3.1.3 Inference at the Grammatical Level

Inference disambiguates homonymous grammatical structures and interprets grammatical irregularities, just as it does lexical items. Disambiguation through inference begins with the identification of the inflectional endings. After all, how do we know that in the Russian sentence:

(14) Ljublju otsa djevushki.
love-1sg father-ACC girl-GEN

or its Latin equivalent:

(15) Puellae patrem amo.
girl-GEN father-ACC love-1sg

djevushki and puellae, which according to their form may either be genitive singular or nominative plural, are in the genitive case, except by reasoning: since they could not be in the nominative plural, they must be in the genitive singular (these two being the only possible choices)? Likewise, whether the Russian sentence:

(16) Otsa djevushki ljubjat.
a. father-ACC girls-NOM love-3pl
b. father-ACC girls-GEN [people] love-3pl

or the equivalent Latin sentence:

(17) Patrem puellae amant.
a. father-ACC girls-NOM love-3pl
b. father-ACC girls-GEN [people] love-3pl

means "the girls love (their) father" or "(People) love the girl's father" can only be worked out, on contextual data, by applying the formula: either p or q, since not p, so q. When the choice is to be made from more than two possible terms, then: since not p, nor q, nor r ..., so s.

Inference, or rather inference based on linguistic knowledge and contextual data, can also deal successfully with the interpretation of deviant forms of grammar. For example, in the following two dialogues:

(18) Victoria: All the servants have given notice now.
Frederick: They haven't!
--W. Somerset Maugham

(19) Sally: I've got a job.
Olive: You haven't!...What's the job?
--John van Druten

haven't is ambiguous between a negation of the have in the previous sentence and an emotional response to this have by way of meaning the opposite of the negative form (e.g. They haven't means They have! cf. nice guy -- bad guy in 3.1.2). Contextual data--in Maugham's dialogue, Frederick has just come back, while Victoria has been home all the time; in van Druten's Olive goes on to ask "What's the job?"--remove the possibility of a literal interpretation of haven't as the negation of have, therefore both They haven't and You haven't in these two examples carry the message of great surprise: "They have!" and "You have!"

This is not intuitive interpretation, because not only is the inference conducted in accordance with the Gricean formula, but it is based on the linguistically viable commutation of the semantic opposites.

3.1.4 Inference at the Lexico-Grammatical Level

In contemporary linguistic literature, there has been a long tradition of regarding grammar as the sole embodiment of the systematic nature of language, leaving the lexicon a passive role of nonsystematic, linguistically uninteresting carriers of grammatical relations. Hence the discrepancy between the learned view of the study of language as mainly a grammatical discipline and

the popular idea of language as words and their use.

It will be remembered that Saussure in his Course in General Linguistics illustrates the nature of the linguistic sign and linguistic value mainly with examples from the lexicon--words. Why this practice was not followed in linguistic tradition is not clear, but it may be a result of the attempt to have as little to do with meaning as possible and the abhorrence for concepts. However, if we take a look at Chinese grammar without preconceptions about autonomous syntax, we will see that the argument for an active role of the lexicon is quite strong. In this section we shall see how lexical meaning may, through speakers' capacity for inference, determine the message of an utterance in default or even in spite of the grammatical structure.

As is well-known, there are many sentences in Chinese which are either subjectless or objectless, or both, and there are sentences which are normally either active or passive. Such sentences are usually said to be interpreted pragmatically. However, pragmatics as an outlet for difficulties in formal linguistics is growing unmanageable. One would like to see its scope narrowed, and this can be done to a considerable degree if it can be shown that signals to the exercise of intelligence and understanding may come from the lexicon, as well as from the grammar.

Take, for example, a sentence like:

(20) haizi bao qu le.
child embrace go PERF

The grammar of Chinese produces an ambiguity of interpretation: either "The child has been carried away", or "The child has carried (sb./sth.) away". It has to be disambiguated according to whether it is said in answer, for example, to "Where is the child?", or "Where is the cat?" If the whereabouts of the child is in question, then the inference presumably goes like this: "Since a question has been asked about the child, haizi refers to this child rather than any other child; and since there is nothing in the context saying that the child has carried away something or someone else, the message must be: the child itself has been carried away." In case the whereabouts of the cat is the point of interest, then haizi bao qu le is not

meaningful unless the action is performed by the child toward the cat and not the other way around. The verb bao (carry by embracing) also plays its role, since it is typical of the way a child is carried away or a child carries a cat. Therefore, the inferences are triggered by lexical items.

Such structures are regular, rather than exceptional, in Chinese. Here are some further examples:

(21) ji chi diao le.
chicken eat away PRT
(The chicken has been eaten up, or:
The chicken has eaten up something)

(22) mama jiao guo le.
mummy call EXPER PRT
(Mum has called, or: Mum has been called.)

(23) ni qu yiyuan kan guo le ma?
you go hospital look EXPER PRT Q-PRT
(Have you been to the hospital to have a look, or: Have you been to the hospital to be looked at (to see the doctor)?)

When one of the interpretations is pragmatically not permissible--usually the active one--then the sentence is unambiguous with its **wrong** grammatical form and no context is required for the passive interpretation:

(24) xin yijin shoudao.
letter already receive
"The letter has been received."

(25) hua jiao guo le.
flower sprinkle EXPER PRT
"The flowers have been sprinkled."

(26) cheng gong po le.
city attack broken PRT
"The city has been broken open under attack."

In examples (24-26) we have strong evidence that sometimes lexical meaning may have precedence over grammatical structure in determining sentence meaning. These sentences not only have a passive interpretation, but the passive particles bei, gei, etc. are normally not used in them, except when the occasion is thought to be in some sense out of the ordinary. Thus (26), being an out-

standing event itself, can readily be turned into:

(26a) cheng bei gong po le.
city PASSIVE attack break PRT
"The city has been broken open under attack."

(25) can have the passive particle only when some additional meaning has been put in to make the occasion noteworthy, for example:

(25a) hua gei yong kaishui jiao guo le
flower PASS use boiling water sprinkle EXP PRT
"The flowers have been sprinkled with hot water."

As for (24), it is difficult even to imagine an occasion when the passive particle would be used.

One may of course provide pragmatic explanations for both the ambiguous and unambiguous sentences above. But, for one thing, it is advisable to avoid throwing everything into pragmatics. More importantly, a lexico-grammatical, rather than pragmatic, interpretation helps to resolve two difficult problems about Chinese grammar: 1. the extremely frequent occurrence of topicalization, for which there is often no particular motivation, and 2. the existence of what may be considered the reverse of topicalization: subject in object position. For example,

(27) tai shang zuo zhe zhuxituan.
platform on sit STAT presidium
"The presidium is sitting on the platform."

(28) lu pang ting zhe yi liang che.
road side stop STAT one CL vehicle
"A car is parked at the roadside."

The difficulty that sentences like (27) and (28) create for Chinese grammarians lies in the fact that there seems to be absolutely nothing to say about these subjects (zhuxituan and che) sitting in object position in order to save a word order-based grammar from going to shambles, except to call tai shang (on the platform) and lu pang (at the roadside) **subjects**, which some grammarians actually do.

With the active role of lexical meaning and the inferences it triggers taken into account, however, Chinese grammar seems to be saying, in a

reasonable way: since Lao Li da Lao Wang and Lao Wang da Lao Li ("John beat Jim" and "Jim beat John") are both possible events in this world and one has therefore to differentiate the one from the other, of course word order is important here; but letters are always received by someone and never receive anyone; flowers are sprinkled on and never sprinkle; men sit and not are sat on; cars can only be made to stop, so why bother about word order? Regardless of word order, simplicity is achieved in (24-26), and a special form for descriptive statements, with the subject sitting after the verb, is made possible, as in (27) and (28).

Another argument for an active lexical role can be found in sentences like (29), where there is a typical collocation between noun and verb:

(29) laoying diao qu le.
hawk hold in mouth go PRT.
"The hawk has snatched (it) away."

Although (29) is structurally ambiguous like (20), actually it can only mean an active relationship between laoying and diao because diao typically collocates only with laoying and huangshulang (weasel). So much so that in answer to a question like "Where is the chicken?", some Chinese would use (30), which, grammatically speaking, is the passive form of (29), to convey the same message as (29).

(30) laoying gei diao qu le.
hawk PASS hold in mouth go PRT
Literally: "The hawk has been snatched away";
actually: "The hawk has snatched (it) away".

Here the typical active voice collocation between laoying and diao, together with the inference that this must be a statement about the whereabouts of the chicken and not of the hawk, succeeds in neutralizing the passivization function of gei and assigning it a new meaning of emphasis.

The potential collocation of a verb can also influence the interpretation of a sentence where there is no subject. Therefore,

(31) xia le (or) zai xia le
down (verb) PRT PROG down PRT

has the unmarked meaning of "Rain is falling",

because xia typically collocates with yu (rain). It also collocates with xue (snow) or people coming down from a mountain or some other high places. But these are marked cases where either the subject should be present, or a context is required. In a cooking situation, xia is often transitive with an implied object (food to be boiled in water, especially noodles). Therefore (31) in the mouth of a waiter would mean: "The noodles are being put into the water to be boiled."

If we look at these transitivity relationships in Chinese as eventually determined by inference based on lexical information, then we find uniformity between transitivity and such other major categories as number and tense. As is well-known, the category of number is absent in Chinese nouns. Whenever necessary, number is expressed lexically, either directly with numerals ("three table", "two person"), or indirectly with adverbials, deictics, etc. ("table all destroyed","these book", "a half guest already arrived" (half of the guests have arrived) and so on). There is available a plural particle men, but its use, except in pronouns, is limited to nouns meaning humans--and even then not obligatory except in a few functions, such as in an address where numerals or deictics are absent. Likewise, the category of tense is absent in Chinese ("He dies at 1789 year"). There are a number of particles to be used if necessary: guo (verb perfect particle), le (verb or sentence perfect particle), etc.

The influence of lexical items on sentence interpretation is not non-existent in English, though much rarer than in Chinese and therefore neglected. The following set of sentences, for example, is given in Fillmore (1972):

(32)
A. Harvey viciously took advantage of Melissa.
B. Melissa was viciously taken advantage of by H.
C. Harvey willingly took advantage of Melissa.
D. Melissa was willingly taken advantage of by H.

The adverb viciously in both A and B relates to Harvey's participation in the act, while willingly in C and D relates to the participation in the act of the individual in the surface subject NP. Fillmore (1972) explains as follows:

> certain adverbs may be introduced into a sentence as ways of qualifying one participant's role in the activity... Thus Manner adverbs of the type viciously may appear only in sentences having underlying Agents, the scope of the adverb being unaffected by the ultimate choice of surface subject.

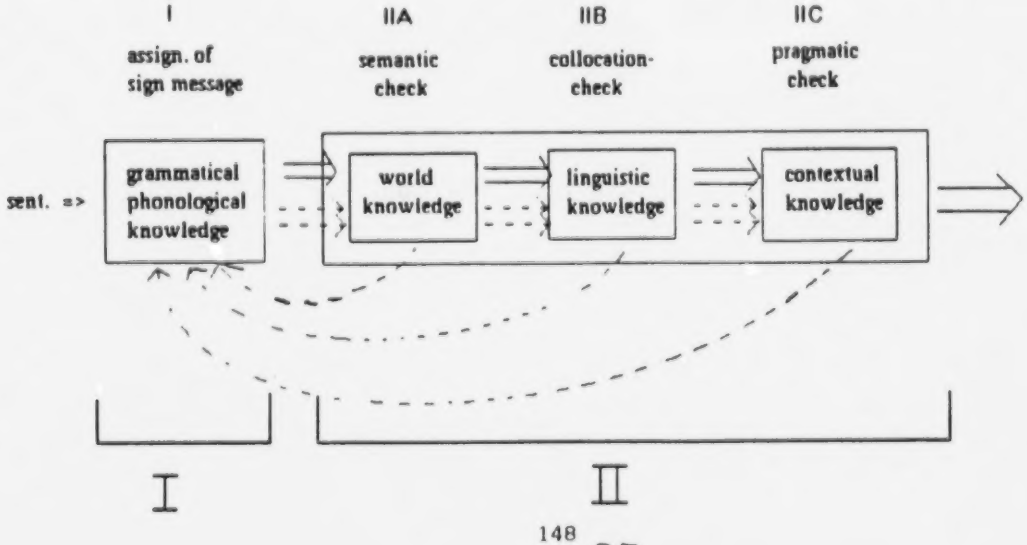
This is to say that manner adverbs of the type viciously always qualify the underlying Agent's activity. We are still not enlightened as to why this is so, and what type viciously represents.

From the viewpoint of the influence of lexical items on the interpretation of grammatical structures, A, C, and D have interpretations, as predicted by the grammatical structure. The predicted interpretation for B, however, is blocked by the incompatibility in meaning of the adverb viciously with the patient of the act of taking advantage. The only alternative is to relate viciously with the agent of the act. The resulting interpretation works. So, it is nothing but a process of: since not p, then q.

3.2 A Model for Inference in Sign and Sentence Interpretation

In order to provide a unified model to explain what mechanism is behind the performance of the inferential processes at the various levels of language use discussed in 3.1, the following is suggested:

FIGURE 5



Here II, the working out of the sentence message, is seen as a check on the interpretation reached at I. The interpretation is checked semantically, collocationally, and pragmatically. If it fails to pass a check (when no coherent message is obtained), it is sent back through the dotted curved line to I to be processed again. When a check is successfully passed, the output, just as the output of the sign assignment process at I, can only be either an unambiguous or an ambiguous interpretation. The former is represented by ⟹ and the latter by ⋯⟹ (which indicates not only 2-way, but 3-way or multiple ambiguity). The arrows ⟹ and ⋯⟹ are therefore mutually exclusive. Inferences take place at the various checks on the basis of the output of the previous analysis or check with the help of the knowledge typical of the current check: world knowledge at the semantic check, linguistic knowlege at the collocational check and contextual knowledge at the pragmatic check. It is normal for the output of the semantic or the collocational check to be either ambiguous or unambiguous no mattter whether the input is ambiguous or unambiguous. The output of the pragmatic check is expected to be unambiguous because we have reached the end of the procedure of interpretation. If an ambiguous interpretation nevertheless results, either a larger context is needed for its interpretation, or the sentence may be judged as incoherent.

A non-ambiguous sentence used in its literal meaning, such as (1) (Shakespeare was a great playwright), goes through all the checks without any changes. If however the sentence is used to imply that Shakespeare was no great philosopher, then the hearer will have to go through a Gricean process of inference at the pragmatic check (IIC), triggered by the sentence's lack of relevance to the topic in its surface meaning. He will infer the implicated message on the basis of his contextual knowledge that Shakespeare's greatness as a philosopher is the topic of the conversation.

The structural analysis of the Russian sentence [eto sat] will give at I, in consequence of the phonological rules concerned, either eto sat or eto sad. The first variant is rejected by the semantic check (IIA) as meaningless, therefore we have eto sad 'This is a garden'.

The dialectal Chinese sentence qing chi ni gives two variant interpretations both at I and IIA, because 'Please eat the mud' and 'Please eat

the pear' are both grammatically and semantically normal, but the collocational check (IIB) will bias the hearer strongly against the former. Therefore IIB sends to IIC a still ambiguous but biased (towards the 'pear' interpretation), which IIC eventually disambiguates in favour of 'pear' if there is no contextual evidence against it, but possibly also in favour of 'mud' when context forces this interpretation.

(11B), On the shelf (rising), will produce two interpretations at I: (a) "On the shelf?" (normal interpretation for rising tone), (b) "On the shelf + non-assertive tone (a sociolinguistic connotation of rising tone)". Both will go through IIA and IIB, until contextual knowledge excludes one of the variants through inference, e.g. if the speaker is a housewife in her own home, besides she has just used the spaghetti sauce, then the message cannot be (a), it must be (b).

Sentence (12) (His aim was to consolidate the bank), as already mentioned in 3.1.2 , has to be disambiguated at IIC.

He has something on his conscience gives two interpretations, one literal and one idiomatic, at both I and IIA. The collocational check IIB decides on the idiomatic explanation--the collocation of to have something on one's conscience is only used in its idiomatic sense. He offered his hand, on the other hand, can only get some bias at IIB and has to be disambiguated at IIC through inference with consideration of actual contextual circumstances.

They haven't! in (18) is unambiguous at I, and remains so through IIA and IIB, until this unambiguous interpretation of a negation of the previous statement is rejected by IIC because Frederick is just back home, and therefore he couldn't know better about the servants than Victoria, who has been with them all the time. It is sent back to I, where the lexical knowledge of the commutation of antonyms in an emotional state provides the interpretation "They have!", which sucessfully passes all the checks as the implicated message of the sentence.

Xin yijin shoudao (24) is an instance of how the two-way ambiguous interpretation at I is disambiguated at IIA with the help of world knowledge: since a letter never receives anyone or anything, it must have been received.

4.0 Conclusion

It is certainly very important to study the linguistic systems, because without a clear conception of these systems, it would be impossible to really handle the mess that is language use. However, linguistic systems alone are not enough to explain the verbal activities of human beings. Humans use their intelligence in communication, hence the importance of sign interpretation and logical inference in language use. The fact that the same kind of logical inference is at work at all levels of language use may be seen as a key to the problem that has been puzzling linguists for so long: why language is at the same time so difficult for experts to formalize, yet so easy for children to learn.

Acknowledgment

This is a partial version of my paper "Linguistic System, Lexical Meaning and Language Use," written at the Chinese University of Hong Kong in Spring 1990. I am indebted to the CUHK English Department for funding this research.

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